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All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

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EDITORIAL



AUSTRALIAN RADIO AMATEUR CALL BOOK

Last year the Wireless Institute of Australia completed two years of negotiations to obtain the exclusive rights to publish the list of licensed Australian transmitting Amateurs. The first edition was "on the street" in April, and how it was received by the Amateurs and Short Wave Listeners after so many years without one, is now history.

After a year in circulation the Institute can look back with pride at the success of its first attempt to publish a book of this nature. However, without the loyal support of Advertisers and the sales to Amateurs and Short Wave Listeners, the success of the publication could not have been achieved. To all those people, the Institute says "thank you!"

Although the publication sold well, it was surprising the quantity left over, considering that an up-to-date listing had not been printed for some years. A Common-wealth-wide check on sales figures indicates a fairly high percentage of non-purchasers amongst the DX men, who, according to their own line of thinking, are not so concerned with the names, call signs and addresses of Australian Amateurs as they are with those outside of Australia.

The Institute cannot force each and every member to purchase a copy of its Call Book, although it is not considered infradig to expect it to be the same. The book is not dear ranged alongside most publications today. Every copy sold helps to keep the publication alive, up-to-date and with added attractive sections.

This month—July, 1955—the second edition is available carrying over one thousand changes; every change of address, and altered and new call signs made since the last publication are included.

In addition a new and comprehensive section is included listing all the International Awards for which the DX enthusiast can apply. It is believed that this is the most complete list published in any one journal before, and includes Awards for the Short Wave Listener as well.

This is the first addition to the Australian Radio Amateur Call Book and, it is hoped, the forerunner of a number of proposed sections that will be added annually as each new edition goes to press.

It is your book! Your support will maintain a valuable service not only to Australian Amateurs, but Amateurs all over the world.

FEDERAL EXECUTIVE.

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Wideband Audio Phase Shift Networks

PART TWO

BY N. SOUTHWELL,* VK2ZF

THOSE UNUSUAL VALUES

In searching for components of the correct values for the designs worked out (see Part One, previous issue), it is unlikely that you will be able to obtain them exactly. Choose either all your condensers (or all your resistors) as near as possible to the "target" values aimed for, as an error in one pair of components can be compensated for as follows:

In each network there are three pairs of components and the R/C products for these three pairs are the same, i.e.

$$R_1 C_1 = R_2 C_2 = R_3 C_3$$

Referring to the A network design,
 $R_1 = 15,000$ ohms
 $C_1 = 0.00714$ μ F.

The product of the two =
 $15,000 \times 0.00714 = 107.1$.

The product of $R_2 C_2$ will be the same, i.e. 107. Product of $R_3 C_3$ will differ if resistance voltage dividers are used on the outputs.

Incidentally, all calculations for this article were done on a slide rule and decimals are only taken to five places, so if there is a slight discrepancy between some of the sets of R/C values for each network don't worry, the error will not be worth considering.

Assume our nearest condenser, measured 0.007 μ F. To find the new target value for $R_1 =$

$$\frac{107.1}{0.007} = 15,300 \text{ ohms.}$$

We could, of course, fix the value of R_1 and determine a new value for C_1 —

$$\text{from } C_1 = \frac{107.1}{R_1}$$

All three pairs of components in each network can be treated similarly, but remember the R/C value of the B network pairs will be different to that of the A network.

Yet another method of checking the operation of pairs of components is available to us, once again by the use of the c.r.o. and the audio oscillator. The design frequency for the A network was 1,488 cycles, and that for the B network 329 cycles. At 1,488 cycles the three pairs of components in network A will give us a 45° phase shift, likewise the pairs of components in network B will behave similarly at 329 cycles.

The test set-up needed for this will be the same as that used to align the type of network used in the G.E. "Ham News" S.s.b. Junior Transmitter and Signal Slicer Receiving Adaptor, which is the next unit to be discussed. The c.r.o. patterns observed will be the same, but the tests must be done at the design frequency of the A and B networks, not forgetting of course to check the c.r.o. to see if phase shift correction is required.

Fig. 8 shows the basic schematic of the phase shift unit popularised by the articles on s.s.b. equipment in G.E. "Ham News." This unit is one of the simplest and has a lower insertion

loss. It is rapidly gaining in popularity and is manufactured commercially in the U.S.A. by at least one firm and whilst this article was in course of preparation, the writer was informed that one Sydney manufacturer will, upon request, make a kit of precision condensers for this particular phase shift unit available at quite a reasonable figure. The differential phase shift between the outputs can be kept to within $\pm 1.3^\circ$ of 90° when properly adjusted, over a frequency range from 225 cycles to 2750 cycles. This means that over a suppression range of 12:1 the worst suppression obtainable is 39 db., and the average is around 45 db.

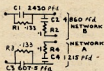


Fig. 8.—Phase Shift Unit popularised by G.E.

This unit is fed from an unbalanced push pull source as will be seen from Fig. 11. The arm of the pot. in the input circuit is grounded and from A to ground the voltage measured with a v.t.v.m. should be 28.57% of that measured from B to ground.

This design incidentally is worked out on the basis that the geometric mean frequency of the audio range is 800 cycles, as against the frequency of 700 cycles used for the design of the lattice networks just dealt with.

In connection with the components of this network, the values of the 0.1 meg. and 0.133 meg resistors should be as close as possible to the ratio of 3:4 to each other, this is more important than their actual value. In VK and ZL, precision 0.05 and 0.1 meg. resistors are available and the above values can be built up using these with little trouble. The 0.133 meg. being obtained by using 0.05 and 0.1 meg. connected in parallel, in series with another 0.1 meg. resistor.

The condensers can be built up by using a fixed condenser slightly less capacity than that specified, paralleled by a variable padder unit of suitable size, to enable the exact capacity required to be obtained during the alignment procedure.

For the easy going, there is an easy way out. Measure all the components on a bridge, obtain the correct values and assemble them. The result will be satisfactory, but the performance of such a network would not be as good as one which was individually aligned. This is brought about by the use of different reference standards for resistance and capacity, the alignment by means of a c.r.o. and oscillator overcomes this difficulty.

Amplitude balance between the two outputs in this design is satisfactorily obtained by varying the cathode bias, and thus the output, of one of the tubes following the phase shift unit, the correction usually required is small. This type of network must be fed directly to the grid of a tube as shown.

To align the networks, wire up the circuit shown in Fig. 10. The transformer used should be of good quality, the ones the writer has seen recommended for use with these networks in the U.S.A. are unobtainable in Australia, but no trouble was had with three transformers tested in conjunction with these units. Feed tone from the oscillator and adjust the arm of the pot. until equal voltages are obtained, between it and points A and B. Check these voltages by use of the c.r.o. With no signal applied to the horizontal input, connect the vertical input in turn between A and B to ground, and adjust the arm of the pot. for equal deflection of the trace in each position.

With the phase shift unit components mounted, but not wired, connect R_1 and C_1 in series. Then connect the free end of C_1 to A, and the free end of R_1 to B. With the c.r.o. connected as shown, it can be checked to see if any phase correction is required by connecting leads C and D temporarily to A, having the oscillator set to a frequency of 490 c.p.s. Then move lead D from A to the junction of C_1 and R_1 , adjust C_1 until a circular trace is obtained as described previously. Conduct this adjustment at a low level to avoid overload.

Having obtained the correct pattern, disconnect R_1 and C_1 and connect R_2 and C_2 up in series in their place. Move the oscillator frequency to 326.7 c.p.s., check the c.r.o. to see if phase correction is required, and repeat the line-up operation on this pair of components. These four components comprise one network.

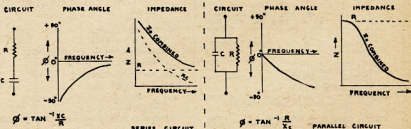


Fig. 9.—Characteristics of Series and Parallel R/C Circuits.

* 90 Dutton Street, Yagoona, N.S.W.

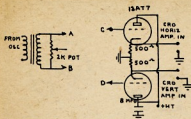


Fig. 10—Test and Adjustment Circuit for Phase Shift Networks.

See text for connections to A, B, C, D.

The same procedure is followed when wiring up the components of the second network. R3 and C3 are adjusted at a frequency of 960 c.p.s. and R4 and C4 at 1307 c.p.s.

To check the complete phase shift unit after wiring is complete, use the set-up in Fig. 10, connecting leads A and B to the input and leads C and D to the two outputs. Refer to Fig. 11 for the network connections. Set the oscillator frequency to 1250 c.p.s. and adjust the arm of the pot. until a circular trace is obtained on the c.r.o. Swinging the oscillator frequency now from 200 c.p.s. at 3,000 c.p.s., the c.r.o. pattern should be perfectly circular at 440, 1225 and 2500 c.p.s., wobbling a little from side to side as intermediate frequencies are covered. For use in transmitters, the complete network set up is as shown in Fig. 11.

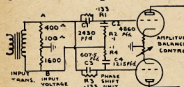


Fig. 11—Complete Circuit of Phase Shift Unit in Fig. 8 connected for use in a Transmitter.

The tapped 100 ohm resistor shown in series with the other resistors across the secondary of the input transformer should be a potentiometer with the moving arm going to earth.

It will be noticed that the frequencies used in the alignment of this type of network are not round figures. Don't let this worry you if you are after accuracy, as there is a fairly simple way out of the difficulty. The ratio of these frequencies to each other is more important than their actual frequency. All frequencies used are sub-harmonics of 3920 c.p.s. If a stable simple oscillator of fixed frequency is built, whose output approximates the above figure, the main audio oscillator can be set to the frequencies required by feeding both oscillator outputs to the c.r.o. and using Lissajous figures to set the frequency of the variable oscillator. The procedure for obtaining these figures and their interpretation is simple and is covered in most Amateur Handbooks.

There is another type of unit which is similar as far as electrical circuitry is concerned to that of the G.E. unit shown in Fig. 8. However, the ratios that the various components bear to each other is different. The design equations differ from the lattice type network equations given earlier. However, from the design equation for one of these units covering

a frequency range 300-3000 cycles, the following ratios hold good. (For nomenclature refer to Fig. 8, but **note**, these ratios do not apply to the values given in Fig. 8 for the G.E. network.)

$$\frac{R1}{R2} = \frac{R3}{R4} = \frac{C2}{C1} = \frac{C4}{C3} = 1.58$$

$$\frac{1}{R2 \times C2} = \frac{1}{R1 \times C1} = 3,015$$

$$\frac{1}{R4 \times C4} = \frac{1}{R3 \times C3} = 11,780$$

To construct one of these units, pick a common value for R1 and R3, or C1 and C3 and calculate the rest of the values from the data above. The input voltage divider in this case had best be solely a pot. of 1,000 ohms or so. The input voltages required will be unbalanced but a different ratio to those stated for the G.E. network. Adjust the divider, using the set-up in Fig. 10, with a completed unit and a frequency of 1,000 cycles/sec. Using equal gain in each oscilloscope channel, adjust the input pot. until the circular pattern is obtained on the screen. The frequencies for adjustment of the pairs of components will be those where the reactance of the condenser in each pair equals the resistance that goes with it, thus giving a 45° phase shift. The test set-up will be as in Fig. 10 and used as for the G.E. network.

From experience gain since the article was first written has proved that the lattice networks are more tolerant regarding operating conditions than the G.E. type networks.

NETWORK CONSTRUCTION

The most popular form of construction appears to be that of mounting the components on a section of "fish back" strip, so that they are readily accessible during initial testing and adjustment. It will be found best to wire up the strip, also attach input, output and earth leads to it before mounting components, then mount the condensers and finally the resistors. This sequence of working gives less chance of the resistors becoming heated accidentally. If carbon resistors are used, they must at all costs be protected from heating.

This is best accomplished by leaving their pigtails uncut and clamping each one between the jaws of a pair of bull-nose pliers as a thermal shunt, to keep heat away from the components whilst the soldering of that pigtail is taking place. Do not be in a hurry to remove the pliers, wait until the work has cooled. Carbon resistors, upon being heated, change their value. It usually increases, by anything up to 20%, and this change is permanent—so be careful.

One watt and half watt rating resistors have been used with no trouble of any sort in a number of years, some of which have been in use three years and have been stable in all respects. Quarter watt resistors have not been used as on occasions the writer has found these to "age" more than the larger rating types. Some brands of resistors have a better reputation for stability than others, these brands are generally known to Amateurs from hard experience. Naturally choose reputable makes of resistors for use in phase shift units.

Should you use wire wound precision resistors, then ignore remarks made concerning avoiding heating the resistors, however be sure your precision resistors are wire wound, there are carbon precision resistors available which have an accuracy of $\pm 1\%$.

Anyone nervous of heating the resistors can easily manufacture a mounting strip using small bolts and nuts, thus obviating soldering the phase shift unit resistors in place.

Condensers used should be mica, or silver mica; postage stamp varieties are quite suitable. Do not use paper or metalized paper condensers. Ceramic dielectric condensers, as also available. Variable condensers, where needed, can be of the mica compression type, used as padder condensers in B/C sets. It is better not to try and make the unit too compact; on more than one occasion the writer has seen whole units wrecked because they became over-heated during soldering, due to their small physical size.

The signal level at which the phase shift units operate is relatively high and no need has been found to shield any to date because of feed back troubles. From a long range point of view, it is best though to mount the unit inside a case, and wire it to a tag strip mounted outside, or to terminals on the case. Then connections to the unit can be altered readily, with no fear of heating up the components.

GENERAL

The close tolerances called for when selecting component values for use in phase shift units has caused concern to nearly all who have thought of building them. If the components vary from the "target" values aimed at, the operating range of the network will shift up or down the audio range. If the components are larger than required the frequency will drop and vice-versa.

Intelligent use of an oscillator and a c.r.o. will eliminate any doubt in your mind as to just what is taking place in a phase shift unit. Remember that components can be split up into pairs and checked, as described previously, should you have reason to believe that something is wrong with the operating characteristics of any network. The information in this article should be sufficient to enable you to trouble-shoot any type of unit.

The differential phase shift of the two networks (i.e. the phase difference between their outputs) depends upon the accuracy of their components. The ratio of desired to undesired sideband depends also upon this accuracy, which is really how much the phase shift difference in the two network outputs depart from the 90° figure aimed at. The ratio of the two side bands can be obtained from the formula—

$$\frac{\text{undesired sideband}}{\text{desired sideband}} = \tan \left(\frac{D}{2} \right)$$

where D = the deviation in degrees from 90° between the two outputs.

At different frequencies in the operating range, the deviation will be different (remember how a perfect circle trace in the c.r.o. cannot be obtained over the whole operating range). This formula can be used to obtain the side-

(Continued on Page 12)

ZEPHYR MICROPHONES

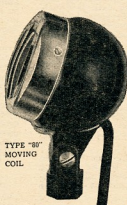


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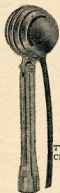


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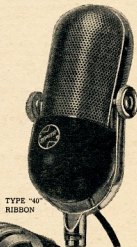
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BY S. T. CLARK,* VK3ASC

THESE receivers were manufactured in quantity during the War by Bendix Radio for use in aircraft as part of MN31 Automatic Radio Compass equipment.

From time to time numbers of these receivers have been available inexpensively on the disposals market. They are of superlative construction and cover a useful frequency range.

The modifications to be detailed are as follows:

- (1) The receiver is for use as a car radio.
- (2) A.c. powered for use as a b.c. receiver in the shack, or as an i.f. channel following either a converter or a receiver such as the BC348.
- (3) Readers are referred to "QST" for December, 1952, "A Bargain Novice Station." This deals with the conversion of an MN26Y for use on 80 metres and the addition of a simple one-valve trans-

mitter operated from a built-in power supply.

Fig. 1 shows the circuit of an MN26 Receiver as modified for a.c. operation.

Since this receiver was originally designed for operation as part of an A.D.F. system, it contains components which are not necessary for Amateur use.

1.—As Car Radio

For use as car radio where installed genemotor is to be used or other suitable type (230v. 70 Ma. will be sufficient) substituted, in this case the components L7-1, L7-2, C9-1, C9-2, L8, C37-2, and C37-3, which comprise the i.v. hash and h.t. filters, should remain. Also the tuning motor will be found to operate satisfactorily on half its normal voltage. Since it is expected that owners will wish to mount the set in the boot of the car, where full remote operating facilities are desired, this too should remain. The set can then be operated from the MN28 Remote Control Unit which

should be mounted near the driving position.

The other alternative, one which will be more attractive to many, is to make the modifications along similar lines to those described in section 2, using the space so vacated to accommodate the few components which remain in the rear section of the chassis and mount the genemotor in some other convenient location.

If this is done the physical size of the receiver can be greatly reduced by such a re-arrangement and the cutting off of the rear portion of the chassis and the cutting down of the case to accommodate it.

The receiver can then be mounted in any convenient position in the front of the car. VK3AFA has modified a number of these receivers, mounting some of them beneath the front seats of certain cars.

2.—For Broadcast Reception

To modify the receiver for broadcast reception the following components are

* Flat 20, 100 Drummond Street, Carlton, Vic.

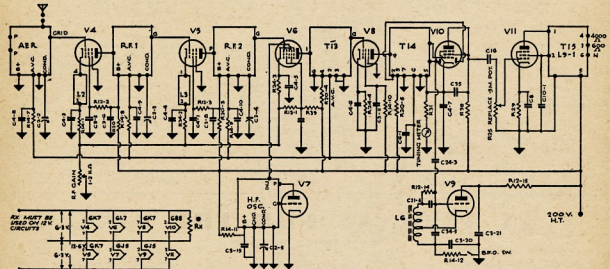


Fig. 1.—MN26 Receiver Circuit modified for a.c. operation.

*Rx—For 12v. operation as follows: 6F6 15.75 ohms, 6X6 63 ohms, 6V6 42 ohms, or number 46 pilot lamp.

- C1-1 to C1-5—6-25 pF. variable.
- C2-1 to C2-5—5 section variable, 12.5-400 pF.
- C3-1 to C3-21—0.05 uF. 400v. d.c.w. micromold.
- C4-1 to C4-11—0.05 uF. 200v. d.c.w. micromold.
- C5-1, C5-2—0.1 uF. 200v.
- C6-1, C6-2—0.02 uF. 200v.
- C7-0.5 uF. 400v. oil.
- C8-0.5 uF. 500v. oil.
- C9-1, C9-2—2 section, 0.5 uF. 100v. d.c.w.
- C10-1, C10-2—2 section, 6 uF. 400v. d.c.w.
- C11-1 to C11-3—35 pF. N680K 500v. d.c.w. ceram.
- C12-1, C12-2—30 pF. 500v. d.c.w. ceramic.
- C13-100 pF. 500v. ceramic.
- C14-1, C14-2—0.005 uF. 2% tol., 300v. d.c.w. mica.
- C15-0.001 uF. 500v. mica.
- C16-0.01 uF. 300v. mica.
- C17-25 pF. 500v. mica.
- C19-1, C19-2—250 pF. 5% tol., 500v. d.c.w. mica.
- C20-1, C20-2—10 pF. 500v. d.c.w. ceramic.
- C21-1 to C21-4—100 pF. 500v. mica.
- C22-1, C22-2—30 pF. 5% tol., 500v. d.c.w.
- C23-1, C23-2—75 pF. 500v. 10% tol., ceramic.
- C24-1 to C24-3—5 pF. 500v. 10% tol., ceramic.

- C25-15 pF. mica.
- C26-25 pF. mica.
- C27-625 pF. 5% tolerance, mica.
- C31-1268 pF. 5% tolerance, mica.
- C32-3214 pF. 5% tolerance, mica.
- C34-1 to C34-5—500 pF. 2% tol., 500v. d.c. mica.
- C35-500 pF. 10% tolerance, mica.
- C37-1 to C37-3 section, 0.1 uF. 400v. d.c.
- C38-100 pF. 2% tolerance, mica.
- C39-1 to C39-3—0.1 uF. 10% tolerance, 400v.
- C40-V7 grid parallel padder.
- L8-40 ohms H.V. R.F.C.
- L9-1—Filter Choke, 6 H. 50 Ma., part of T15.
- L9-2—Filter Choke, 6 H. 50 Ma., part of T15.
- NE1, NE2—Overload Discharge Neon, 60v., 1.25 watt.
- R1—Loop gain control, 15,000 D taper pot.
- R7-300 ohms.
- R9-1 to R9-3—3 ohm, 1/4 watt, wirewound.
- R10-1, R10-2—40 ohms, 1/4 watt.
- R11-1, R11-2—20 ohms, 1/4 watt.
- R12-2 to R12-15—0.1 megohm, 1/4 watt.
- R13-1, R13-2—150,000 ohms, 1/4 watt.

- R14-1 to R14-13—50,000 ohms, 1/4 watt, 10% tolerance, ceramic.
- R15-1, R15-2—2,000 10% tolerance, 1/4 watt.
- R18-1 megohm, 1/4 watt.
- R19-1, R19-2—1,000 ohms, 1/4 watt ceramic.
- R20-2 to R20-5—5,000 ohms, 1/4 watt.
- R21-200,000 10% tolerance.
- R22-1 to R22-5—1/4 megohm, 1/4 watt.
- R23-1—10,000 ohms, 1/4 watt.
- R24-1 to R24-6—600 ohms, 1/4 watt.
- R27-100 ohms, 1/4 watt.
- R28-1 megohm.
- R29-500 ohms, 1/4 watt.
- R31-3,000 ohms, 1/4 watt.
- R32-200,000 ohms, 1/4 watt.
- R33-1—117, 50 and 87 ohms.
- R36-135, 120 and 75 ohms.
- R37-1, R37-2—75.6, 12.6 and 63 ohms.
- R38-25,000 ohms.
- R39-25,000 ohms.
- T15—Audio output, prim.: 645 ohms d.c., sec.: 110 ohms d.c.
- T16—Compass output, prim.: 2,400 ohms d.c., sec.: 14.5 ohms d.c.

removed from the chassis together with their associated wiring.

Loop tuning circuits, V1, R7, C4-1, C5-2, R14-13, R19-2, C3-1, R22-2, C4-2.

Phaser, C39-1, R12-10, R12-11, C39-2, R21, R22-1, R22-2, R15-1, R15-2, C3-14, C3-13, R23, R14-6, C3-16, R1, R18, C2-1, V2, R14-2, R27, R14-1, R12-12, R1, C4-11, R12-13, R36a and b, R34-1, L7-1, L7-2, C9-1, C9-2, C37-1, C37-2, C37-3, C10-2, L8, R12-9, R2, V12, T16, C5-2, L9-2, R13-2, C39-3, R24-5, R19-1, R22-3, C5-1, R32 and C7.

If the filaments are wired as shown on the circuit, then the filament wiring can be conveniently connected for operation either from a 6.3v. or a 12.6v. source. I feel that it is now time to discuss the mechanical changes which are

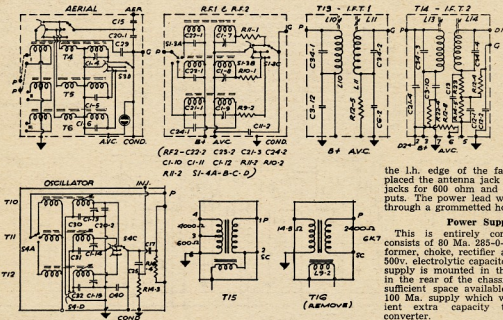
necessary. Since the receiver has a fine reduction gear drive built into it, the writer felt that it should be used. A false front, folded from 16 gauge aluminum sheet, was therefore made as one would a chassis, the lips being folded in at the bottom for half an inch. The whole thing was made the same size as the original front panel and 1½" in depth.

This permitted a cutout to be made for a dial which was made from a sheet of perspex ¼" in thickness to which was cemented a sheet of drawing paper (the solvent for perspex is chloroform). The dial is fixed to the shaft by a single 5/32" machine screw tapped axially into it after the assembly has been

turned so that the drive enters horizontally from the right hand side.

If there is no splined adaptor available for the drive one can easily be made by drilling a shaft extension so that it is a force fit onto the male spline or, if the hole in the extension is too large, the cupped end can be filled with molten solder and pushed on before the solder has time to harden. A cap threaded internally to screw on and hold this in place is a decided advantage, but not essential.

In my case I had a meter of the correct type and this was mounted in the top l.h. corner of the front panel. R.f. gain bottom l.h. corner and the a.f. gain shaft passed through the panel in a similar position on the front r.h.s. On



AN ANTENNA FOR THE S.W.L.

BY NORMAN BURTON*

ONE of the hardest problems to solve for the s.w.l. is "what sort of antenna shall I erect?" Books on the matter offer an intriguing variety and a close study of them results merely in increasing the already existing confusion in one's mind. The fact that the s.w.l. is normally a multiband fan, adds yet more confusion to a problem already very murky. What, then, to erect?

The antenna offered has been in daily use since 1946 in two continents—Europe and Australia—and can fairly claim to be well tried. It is the acme of simplicity to erect and shows a gain over a 132-foot Marconi, or the length of wire so beloved of s.w.l.s., of 4 to 6 S points on the S meter of the receiver and it is literally true that signals can be read on it that are completely inaudible on the other previously men-

tioned antennae. No attempt will be made to explain why or how it works; the writer did once try and work this out, but the effort gave him a violent headache and in consequence the attempt has not been repeated.

It is a version of the Windom and works excellently over the range 10 to 160 metres; it has not been tried on 5 metres, but did work well on 45 to 50 Mc., receiving the East Coast U.S. f.m. stations during 1947-8 most satisfactorily on a Hallicrafter S27 receiver.

To erect the antenna cut the top 33 feet long and tap on the feeder at third the distance from one end, i.e. at 11 feet from one end. The feeder is 41 feet 6 inches long and it is recommended that this length be adhered to, as it has been found to be an optimum length. If you must alter the feeder length, do so in lengths of 16½ feet so as to maintain the feeder an odd number of quarter

waves long with respect to 10 metres, but if possible try and keep to the recommended dimensions.

It will not be found too hard to dispose neatly of 42 feet of feeder, it sounds a lot but once the antenna is in the air you will be surprised how the feeder seems to shorten. A few bends appear to have no effect on performance, but the writer arranges that the first eight or nine feet of feeder hang down at right angles to the antenna.

As regards best direction; in Europe, East and West was found to be best, and though the writer's runs East and West here, it might be better North and South. Of course if you can, put up one in each direction. The antenna has been used with a wide variety of receivers from a 0-V-1 to 19-tube supers and works well with all of them, so now just rush out and get it up, you won't be disappointed I assure you.

* Assoc. W.I.A. BERS11494; 143 The River Road, Revesby, N.S.W.

BY R. BARNETT*

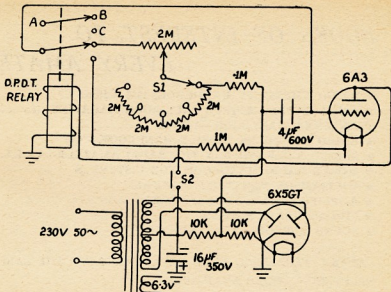
It will provide accurate delayed switching of any circuit of up to 200 watts capacity, the delay being variable from one half second to 85 seconds through five ranges. The original, built by the author, is accurate to plus or minus one twentieth of a second, and could probably be improved beyond this by the use of better quality components, as it was built "from the junk box."

The power supply transformer is a standard type with a 6.3v. filament winding and a 150 volts aside 80 Ma. high tension secondary. The condenser shown in the circuit as 4 uF. 600v. should be of as high a voltage rating as possible; 600v. being considered the minimum, as any leakage will affect the accuracy of the timer. A paper block type is most suitable.

The switch shown as S1 is an ordinary five position wafer type, while S2 is a push button type, normally open. Connections A, B and C may be connected as desired, depending on whether the circuit is to be normally open or closed. Connection through A and B will give a normally open circuit, closing during the timing period.

To calibrate the timer, you will have to buy, beg, or borrow a **self starting** electric clock with a sweep second hand. This is connected in series with points A and B. By setting the 2 meg. control and S1 to various positions, the clock will indicate the corresponding time delay when S2 is closed. A suitable dial can be marked out accordingly, and the timer is ready to be put to work.

* VK3 Associate, Station Street, Cressy, Vic.



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AMATEUR CALL SIGNS

FOR MONTH OF APRIL, 1955

These amendments are included in the latest issue of the Australian Radio Amateur Call Book.

NEW CALL SIGNS

- VK— New South Wales**
 2GH—H. C. Harman, 36 Glenelg St., Raymond Terrace.
 2AMH—J. R. Howard, 18 Clarke St., Earlwood.
 2ATB—F. R. Gale, 6 Churchill Gres., Cammeray.
 2AZP—A. H. Perkins, 77 Fenwick St., Bankstown.
 2ZAZ—G. Harriman, Station: Farm 1850, Lake Wyangan, Griffith; Postal: P.O. Box 123V, Griffith.
 2ZBN—A. D. Nutt, 12 Austral Bldgs., Anzac Parade, Maroubra.

- Victoria**
 3AFU—J. K. Fullagar (Dr.), 34 Sackville St., Kew, E.4.
 3AHQ—H. Denver, 9 Reid St., Murrumbidgee.
 3APH—P. E. Playsted, Station: 112 Webster St., Ballarat; Postal: C/o Police Barracks, Russell St., Melbourne.
 3AZR—P. C. Ryan, 10 Seymour Gr., Camberwell, E.
 3ZAV—P. D. Ward, "Barrabool House," Highton, Geelong.
 3ZBJ—G. S. Jennings, Station: C/o Mrs. M. Hamilton, 37 Dyfield St., Reservoir; Postal: 25 Royal Pde., Parkville.

- South Australia**
 5FC—J. W. Millard, C/o District Council Office, Brindley St., Crystal Brook.
 5KD—D. F. Dawson, 6 Trinity Cres., Salisbury North, Adelaide.
 5LJ—J. R. Lewis, C/o D.C.A. Mess, Box 370, Darwin, N.T.
 5ZAK—G. A. Tidy, 49 Balcombe Ave., Findon West.

- Tasmania**
 7IB—J. G. Gillies, Post Office, Andover.
 7RG—R. Garth, C/o Hydro Electric Commission, Trevallyn, Launceston.

- Territories**
 1JW—J. L. Ward, Mawson, Antarctica.
 1VH—F. A. Van Hulsens, Mawson, Antarctica.
 8CK—M. H. Ewen, P.O. Box 56, Post Moresby.
 8CW—W. C. Ward, Wau, N.G.
 8VP—E. Penikis, C/o Australasian Petroleum Co. Pty. Ltd., Post Moresby.

CHANGES OF ADDRESS

- VK— New South Wales**
 2AI—D. E. Hutton, 16 Russell Street, Vaucluse.
 2IP—G. W. Thornton, 4 Fredben Ave., Cammeray, North Sydney.
 2IQ—R. H. Dixon, Cr. Hague St. and Prune Lane, Lavington, via Albury.
 2RT—M. F. Tierney, 71 Telopia Ave., Caringbah.
 2UN—J. Scott, 43 Baze St., Inverell.
 2ZS—W. J. Smith, Alfred Oval, Lachlan St., Young.
 2ABU—A. M. Dan (Dr.), 50 Carr St., Coogee.
 2ADB—A. A. Cheetham, C/o R. Bennett, 5 Belmore Rd., Penshurst.
 2AED—E. L. Colyer, Station: Vessel M.Y. "Tiki".
 2ALF—W. L. Harris, 58 Brook St., Coogee.
 2ANZ—J. P. Shortall, Flat 4, 180 Ocean St., Edgecliffe, Sydney.
 2AQE—L. K. Furner, Lake Albert Rd., Wagga.
 2ARA—W. N. Short, Station: Lot J1 Government Rd., Beacon Hill; Postal: 85 Auburn Rd., Auburn.
 2AVT—J. J. Fairliegh, Lot 35 Hutchins Ave., Dubbo.

- Victoria**
 3EJ—W. J. Bennett, Albert Hill Rd., Lilydale.
 3FI—D. D. Palmer, Thames St., Frankston.
 3OX—J. W. Watson, 3 Newblign St., Burwood, E.13.
 3QY—C. R. Richardson, 1152 Nepean Highway, Chesham, S.22.
 3QG—B. F. D. Page, Ashby Way, Kilshy.
 3AAC—W. R. Clifton, Flat 4, "Luame," Hughenden Rd., East St. Kilda.
 3ABG—A. G. Miller, 334 Malvern Rd., Prahran.
 3AEW—O. G. G. Washford, Cr. Jacka and McNamara Sts., Ferny Creek.
 3AML—R. E. A. Grison, 40 Bowman St., Mordialloc.
 3AST—S. J. Lloyd, "Tullamore," Humphries Rd., Frankston.

- Queensland**
 4DI—L. W. Effeney, 232 Dawson Rd., Rockhampton.
 4FH—J. F. Bull, Flat No. 4, Oella's Bldg., Victoria St., Mackay.
 4LT—A. E. Carter, 55 Dickensens St., Carina, Brisbane.
 4MC—A. D. Macpherson, 915 Gympie Rd., Chertemps, Brisbane.
 4WT—N. J. G. Watling, Macknade Mill, Ingham.
South Australia
 5AP—H. R. Hodgson, 17 Wood St., Solomonstown, Port Pirie.
 5MW—K. J. Atkins, Laffers Rd., Blackwood Park.
 5ST—R. T. Southwood, Station: Private Residence (1/2 mile N.E. of O.T.C. Station VDI), Darwin, N.T.; Postal: C/o P.O., Darwin, N.T.
 5UF—R. Fenwick, 7 Spark St., Port Augusta.
Western Australia
 6CK—C. M. Hayes, 378 Pearson St., Osborne Park, Perth.
 6KL—H. Leaver, Watherloo.
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CANCELLED CALL SIGNS

- VK—**
 2ABQ—K. G. Hawkins.
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 3AF—R. Garth, Now VKTIG.
 3AF—G. G. Du Faur.
 3AKG—K. G. Horne.
 3ASV—R. J. Stevens.
 4ED—K. A. Taylor.
 4FU—J. K. Fullagar (Dr.), Now VK3AFU.
 4LJ—J. R. Lewis, Now VKSLJ.
 4RG—G. E. Ryan.
 4TC—A. Tremayne.
 4ZAC—B. M. Byrne.
 5IB—J. G. Gillies, Now VKTIB.
 5SK—D. S. Mackay.
 6AQ—L. Ayling.
 6CD—D. F. Dawson, Now VKSKD.
 6SN—A. W. Sowden.
 6SP—W. J. Sperring.
 * See New Call Signs.

BOOK REVIEW

RADIO AMATEUR'S HANDBOOK

The 1955 edition of the **Radio Amateur's Handbook** has recently been released. The American Radio Relay League is proud to announce publication of this thirty-second edition of a book that is internationally recognised, universally consulted and truly the all-purpose volume of radio. Published continuously since 1926, the Handbook has become a leading reference work for hundreds of thousands of radio amateurs, experimenters, students and engineers.

The new Handbook features five basic chapters of basic radio theory, three chapters concerned with history and Amateur Radio operating practices, three of basic experimental data, and fifteen chapters of advanced theory together with practical constructional details, including transmitters, receivers, transmission lines, antennae, power supplies, single-sideband, frequency modulation, keying, amplitude modulation and microwave techniques.

Among the principal revisions of the new edition are those in the vacuum tube tables and base diagrams. Two full pages listing 67 new tube types have been added to the miniature tube section alone. Further additions include 26 crystal diodes, 19 rectifiers, 17 transistors, and 32 other types. A complete listing of electrostatic cathode-ray tubes also forms a part of the tube tables.

The chapters concerned with very high frequencies have been extensively changed to improve clarity and to take advantage of techniques developed as a result of greater occupancy of this por-

tion of the radio spectrum. Notable in this respect especially is the chapter dealing with v.h.f. transmitters, which includes equipment using tubes developed in the past year.

The high frequency transmitter chapter also has been widely revised. Many new units are included, incorporating such features as continuous (multiband) tuning circuits and clamp-tube protective circuits.

The Handbook is revised and restyled in the light of current needs as a radio construction manual, reference work, and training text for class or home study. 768 pages, 6 1/2" x 9 1/2", including catalogue section and 11-page index. Over 1,300 illustrations (including 95 charts and tables, and 559 tube-base diagrams), and 85 basic formulae. Price in Australia is 44/3.



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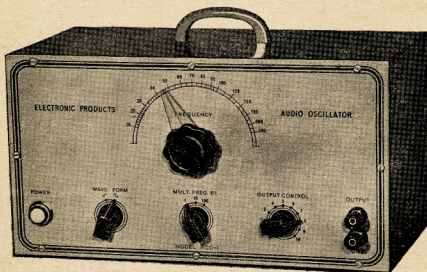
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REMEMBRANCE DAY CONTEST, 1955

The Remembrance Day Contest is an Australian annual contest to perpetuate the memory of those Australian Amateurs who gave their lives for their country during World War II. It is held on the week-end nearest to the 15th August in each year, the date on which the hostilities ceased in the S.W.P.A.

A Handsome Perpetual Trophy is awarded annually for competition between States, inscribed with the names of those who made the supreme sacrifice, and so perpetuating their memory throughout Amateur Radio in Australia. The name of the winning State each year is also inscribed on the Trophy.

Again this year Amateurs in the VK1 call areas can participate in the Contest. Scoring for contacts with VK1 remain the same, namely, **six points per contact per band for all States for contacts with VK1.**

RULES

1. The Contest will commence at 1800 hours E.A.S.T. on 13th August and continue through until 1759 hours on 14th August.

2. The Contest is open to all Australian Amateurs, but only members of the W.I.A. are eligible for the awards.

3. The Contest is an open event—c.w., phone, or a combination of both may be used.

4. The Contest is an Interstate Contest, and Amateurs in each State will endeavour to contact Amateurs in all other States.

5. A station may be operated by more than one operator under the station call sign provided that operators, other than the station licensee, submit a separate log under his own call sign for contest purposes.

To implement this rule, the following procedure shall be adopted by all licensees other than owners of the station concerned.

(a) Licensees operating stations other than their own shall, for the purpose of these rules, be hereinafter referred to as "substitute operators."

(b) **Phone Contacts:** Substitute operators will call "CQ Remembrance Day," followed by the call sign of the station they are operating, and the word "log" followed by their own call sign.

(c) **C.W. Stations:** Substitute operators will call "CQ R.D. de" followed by a group call sign comprising the call sign of the station they are operating, an oblique stroke, and their own call sign.

(d) **Receiving Contestants:** Contestants receiving signals from substitute operators will qualify for points by recording the call sign of the substitute operator only (i.e. the last call sign).

(e) Nothing in (a), (b), or (c) above will preclude the station licensee from participating in the contest himself, providing he submits a separate log under his own call sign.

6. All existing Amateur bands may be used, and all transmissions must conform with the Regulations as laid down in the P.M.G.'s. "Handbook for

the Guidance of Operators of Amateur Wireless Stations." Any breaches of these will lead to the disqualification of the operator concerned.

7. The arrangements of schedules for contacts on other bands will not be permitted.

8. All stations entering the Contest will call "CQ RD" if using c.w., and "CQ Remembrance Day" if using phone, subject to rules governing substitute operators under rule 5 (a), (b), and (c) above.

9. A State competing for the Trophy must submit a minimum of six (6) logs from financial members before becoming eligible for contesting the Trophy.

10. Only one contact per station per band is permitted.

11. Serial numbers to be exchanged during the Contest will be as follows:—

(a) For C.w. the first three figures will be the RST (telegraphy) report, followed by the serial number of the contact commencing with any number between 001 and 100 for the first contact and increasing in value by one (1) for each successive contact. If any contestant reaches 999 he will then commence 001 and continue 002, 003, 004, etc.

(b) For Phone the first two figures will be the RS (telephony) report, followed by the serial number of the contact commencing with any number between 001 and 100 for the first contact and increasing in value by one (1) for each successive contact. If any contestant reaches 999, he will then commence 001 and continue 002, 003, 004, etc.

A complete exchange of serial numbers must take place before any points may be claimed for the contact.

12. In order that an equitable distribution of points for States with a large number of contestants compared with a State with fewer contestants may be determined, a sliding scale of points has been allotted as shown in the scoring table appended.

13. In addition to the points in the scoring table that may be scored by a contestant, a bonus of 25 points may be added to the total score for each State worked on 50 Mc. or above.

14. The log submitted must show in the following order: Date, time, band, emission, call sign, RST/No. sent, RST/No. received, points claimed. No log will be accepted unless laid out in this order.

15. A statement signed by the operator must be attached at the conclusion of the log stating that the Regulations (Rule 6) and these Rules have been observed. Any logs departing from this form will automatically be disqualified.

16. All logs must be forwarded through the Contestant's Divisional Council (for membership checking) to reach the Federal Contest Committee, Box 1234K, G.P.O., Adelaide, on or before 10th September, 1955.

17. Attractive certificates will be awarded to the first, second and third highest in each State; there will be no

outright winner for Australia. Where a large number of logs are received from any one State, further certificates may be awarded at the discretion of the Contest Committee.

18. The State to which the Perpetual Trophy will be awarded shall be determined as follows:—

To the average of the top six (6) logs shall be added a bonus arrived at by multiplying this average by the ratio of valid logs submitted by that State to the total of Amateur Licensees in the Division at the time of the Contest.

Example: Total points equals—

$$\text{Aver. Score} = \left\{ 1 \text{ plus } \frac{\text{No. of Logs}}{\text{No. of Licensees in Division}} \right\}$$

19. The logs which will be accepted for the multiplier under Rule 18 shall show at least five (5) contacts in the Contest.

20. The Trophy shall be forwarded to the winning State in its container and will be held by that State for a period of twelve (12) months when the winners for the succeeding year is determined.

21. The Federal Contest Committee shall be the sole adjudicators and their ruling will be binding in the case of any dispute.

SCORING TABLE

		To								
		VK1	VK2	VK3	VK4	VK5	VK6	VK7	VK9	
From	VK1	6	6	6	6	6	6	6	6	
	VK2	6	1	2	3	5	4	6		
	VK3	6	1	1	3	2	5	4	6	
	VK4	6	1	2	1	3	6	5	4	
	VK5	6	2	1	3	1	5	4	6	
	VK6	6	1	2	4	3	1	5	6	
	VK7	6	2	1	4	3	5	1	6	
	VK9	6	1	2	3	4	5	6	1	

Note.—Read the table from left to right for points for the various States.

Examples:—

VK2 scores	1 point for a VK3 contact
2	" " " VK4
3	" " " VK5
VK6 scores	1 " " " VK2
2	" " " VK3
4	" " " VK4

AUSTRALIAN V.H.F. RECORDS

		TWO-WAY WORK			
Band Mc.	Stations	Date	Miles	Rec'd	
50	VK5KL-WIACS/KH6	26/4/57	5355	10500	
144	VK3GM/3-VKTLZ/FF	9/3/52	317	1400	
288	VK3AFJ/3-VK3AAF/3	21/3/54	63.8	—	
576	VK3ANW-VK3AKE	11/12/49	81.6	—	
1215					100
2300	VK3ANW-VK3XA	18/2/50	9.2	150	
5650					100
10000					100
21000					800 ft
30000					—

It is in the interests of all v.h.f. enthusiasts to notify P.E. through Divisions if you can better these figures. Please give EXACT details of all locations when submitting your records.

ROSS A. HULL MEMORIAL V.H.F. CONTEST 1954-55 RESULTS

PHASE SHIFT NETWORKS

(Continued from Page 3)

band suppression figure at any frequency if the differential phase shift is known.

Suppose the worst deviation is 2% from 90°, then—

$$\frac{\text{undesired sideband}}{\text{desired sideband}} = \tan\left(\frac{2^\circ}{2}\right) = 0.0174 + 1 \div 0.0174 = 57 \text{ (approx.)}$$

This ratio is equal to 35 db., as this is the figure for the point of greatest deviation, the sideband suppression of the unit over the greater part of its range would be in excess of 40 db. (a voltage ratio of 100:1). A departure from 90° of 6° is required before the amplitude of the undesired sideband becomes 5% that of the desired one, a rejection of 28 db. This figure is similar to that obtained with some of the simplest crystal exciters, using two or three crystals, where one crystal is used to eliminate the whole of the undesired sideband. This figure of 28 db. would be about the worst one would want to use, as after all one S point = 6 db. and 26 db. of rejection is not a very good performance figure.

The fetich of accuracy of components, the writer thinks, has been a little overdone. It is all right in commercial practice, but in Amateur circles, where extensive test equipment is not available to check the performance of the complete s.s.b. transmitter or receiver, little will be gained by trying to achieve a ratio of more than 100:1 of suppression of the unwanted sideband (40 db.). The reason for this outlook is that nonlinearity of almost any type in the subsequent circuits (either r.f. or a.f.) following the phase shift unit, and differences in phase shift and distortion in the two individual audio channels, all tend to degrade the sideband suppression of the transmitter or receiving adaptor, and thus "put back" a certain amount of the suppressed sideband.

Fortunately, distortion (non-linearity) in cascaded circuits adds up algebraically not arithmetically. For example, if we have a signal with a distortion content of 1% and we feed it into equipment which has a distortion figure of 2%, the resulting distortion in the output signal is given by—

$$\text{distortion in output} = \sqrt{1^2 + 2^2} = \sqrt{5} = 2.24\%$$

The reason therefore of running all s.s.b. equipment at a power level where distortion is low will be apparent. It will well repay anyone building up a phase shift unit to spend a little time working out the formula for the lattice type networks for various values of R1, differing in steps of 1,000 ohms, and see how the component values change. Also in connection with the above, work out some examples of compensation for one component in a pair by varying the other, using the R/C figure method described. You will worry a good deal less about these units afterwards.

This article has been somewhat lengthy because the maths involved have been kept simple and a lot of it "written around," but it is hoped that audio phase shift networks will not be as big a mystery to readers as previously.

a little "pied-piper-ish" to say the least, had to be published as they stood.

Comments received suggest that scoring be 5 points for the first contact with a maximum of 5 contacts; that the time be shortened; that there be a multiplier for low power mobile operation, etc. Decisions on the 1955-56 Contest, which will be the last using the 50-54 Mc. band, must be finalised this month and the committee will give many hours of serious consideration to them.

I would urge you all to respect their combined judgments, for theirs is a deeper insight to the problems involved as they are in closer touch with Federal Executive and its directive, Federal Council. The committee functioning as a unit can carry out the policy as laid down by the Divisions at the Convention to the betterment of the Institute as a whole.

The Ross Hull Memorial Contest is a fine Contest inspired by a great ideal, to perpetuate the memory of a man whose vision was self-less and inspired. Have faith in your committee for they are motivated by that same vision.

G. M. Bowen, VK3XU, Chairman,
Federal Contest Committee.

— . . . —

NATIONAL FIELD DAY

Logs have been received from the following: VK2WJ; VKs 3ADW, 3AHH, 3APB, 3ARJ, 3GE, 3RN, 3SX, 3YS, 3IE, 3ZAM; VK5PS and one listener's log from N. G. Clarke.

AMATEUR BANDS AVAILABLE

1.84 — 1.86 Mc.	1288 — 296 Mc.
3.5 — 3.8 "	1576 — 585 "
7 — 7.15 "	1,215 — 1,300 "
14 — 14.35 "	2,300 — 2,450 "
21 — 21.45 "	5,650 — 5,850 "
26.96 — 27.23 "	10,000 — 10,500 "
28 — 30 "	121,000 — 22,000 "
144 — 148 "	130,000 Mc. and "
154 — 154 "	Above.

* Available for emergency network purposes only. Normal Amateur activities are not permitted in this band.
† Temporary allocations.

50 Mc. W.A.S.

Call	Certificate Number	Additional Countries
VK2WJ	13	4
VK3PG	5	3
VK2VW	9	3
VK4RY	2	2
VK4HR	4	2
VK5LC	1	1
VK6DW	2	1
VK3RR	6	1
VK3HT	7	1
VK2AEZ	10	1
VK3XA	11	1
VK3GM	12	1
VK3ACL	14	1
VK3ZD	16	1
VK2HO	17	1
VK2ABC	8	1
VK2WH	15	1

WINNER OF TROPHY VK4NG

R. Greenwood, Rockhampton.

AUSTRALIA

New South Wales Points	South Australia Points
VK2ABC ... 1397	VK5MK ... 1620
2HE ... 795	5QR ... 1205
2ATS ... 616	5AX ... 307
2ZX ... 413	5ZL ... 264
Victoria	West. Australia
VK3ZL ... 1484	No Entries
3XK ... 765	
3YS ... 728	
3KC ... 464	
Queensland	Tasmania
VK4NG ... 3490	VK1ZL ... 820
4WD ... 1650	7BQ ... 108
4GG ... 1242	
4MT ... 150	

Check log from VK6BO.

OVERSEAS

Points	Points
ZL1BJ ... 1554	VR2CG/ ZL3LR ... 984
2AGD ... 952	
2DS ... 874	
2ADO ... 710	
3RZ ... 674	

First contact to VK6—VR2CG—VK6HK.

COMMENTS ON V.H.F. CONTEST

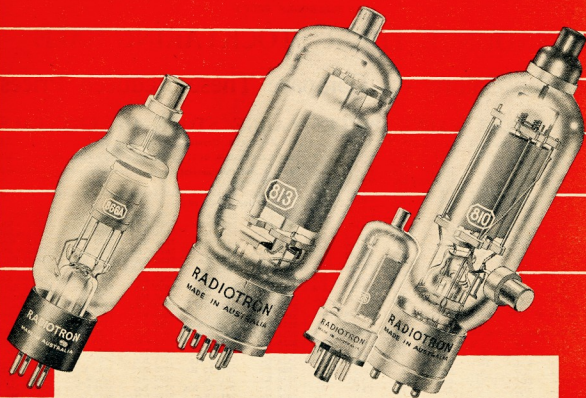
Perusal of the call signs in the top logs in each State showed that approximately 50 stations in VK2, 30 in VK3, 15 in VK4, 15 in VK5 and 15 in VK6, VK7, and VK9 were active. An outstanding feature of the Contest was the participation of nearly 50 stations from all districts in New Zealand. VR2CG/ZL3LR is to be congratulated on his fine score and his success in the first VR2/VK6 contact. VK4NG certainly showed great perseverance.

It is a pity that many stations that participated did not submit logs. This meant that no complete checking could be undertaken by the committee. Fortunately the winning entry was so far ahead that the committee was able to feel satisfied with the checking that could be done.

The committee wish to thank those who took the trouble to send comments and suggestions. The rules, as they were framed by the committee and placed before the Divisions for ratification, were to implement the decisions made at the 1952 Convention. There it was agreed unanimously that all v.h.f. bands were to be included in this Contest. Thus it was felt that it would be futile to make it only an Interstate Contest and in order to introduce the idea slowly, rules for intra-State contacts and a longer operating time were introduced.

The folly of not allowing the Contest Committee to have the final say in drafting rules for these contests was well shown here when some Divisions vetoed the intra-State working and left its companion rule standing. Since there was insufficient time for any further correspondence on the matter, the rules,

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1B5	2/6	6Q7G	5/-	12SK7	10/-	VR22	2/6
3K5	5/-	6RT6	10/-	12SQ7	2/6	VR32	2/6
3Q5	5/-	6SA7	10/-	12SQ7GT	2/6	VR35	2/6
5V4	10/-	6SC7	10/-	816	15/-	VR38	2/6
6AG7	15/-	6SJ7GT	12/6	866	£1	VR66	2/6
6B8	15/-	6SK7GT	12/6	834	£1	VR75	15/-
6C5	7/6	6SS7	12/6	884	£1	VR99	5/-
6C8	7/6	6U7G	10/-	954	10/-	VR102	5/-
6F5	7/6	7A4	5/-	955	10/-	VR103	5/-
6F6	10/-	7A6	5/-	957	10/-	VR105	15/-
6K6	7/6	7A8	5/-	1625	£1	VR122	2/6
6K7	10/-	7B8	5/-	5763	25/-	VR150	15/-
6K7G	7/6	7C7	2/6	EF50	10/-	VT50	2/6
6L7	10/-	7E6	5/-	UR10	2/6	VT51	2/6
6L7G	7/6	7W7	5/-	VR18	2/6	VT52	10/-
6N7	10/-						

Full stocks of New Valves available. Prices on request.

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1K7	5/-	6AC7	10/-	6SA7	10/-	12A6	10/-
1L4	5/-	6AG5	10/-	6SJ7	10/-	12K8	10/-
1S5	10/-	6C6	5/-	6SK7	10/-	1625	15/-
2X2	10/-	6D6	5/-	6SL7	15/-	CV92	15/-
3A4	5/-	6H6	5/-	6SN7	7/6	EF50	5/-

C.R.O. Power Supplies, 220-260 AC input, variable HT output: 750v., 1300v., 1900v.; LT output 220v. at 100 Ma. Two 2.5v., one 5v., one 6.3v. filament winding. One 2X2, one 5V4. Complete in metal case 23 x 9 x 14. Few only, £12/10/- F.O.R.

Bendix RA1B Power Supplies, 240 volt AC, 24v. at 1 amp. output 250v. HT £5 each

Genemotor Power Supply, SCR522, 24v. input, 150v. and 300v. output at 300 Ma. Includes relay, voltage regulator, etc. A gift at £1. Too heavy for postage.

2.5v. or 4v. Filament Transformers	15/- each
Chokes, 15 Henry, 100 Ma.	10/- each
Chokes, 15 Henry 175 Ma.	20/- each
Solor 28 pF. silver plated wide-spaced Condensers	7/6 each
2 uF. 1000v. block type Chanex Condensers	12/6
Relays, A.W.A. Aerial Change-over type, 12v.	15/-
English Carbon Mike Transformers, new	5/-
Locktal Sockets	1/6 each
Valve Sockets, ceramic, 8-pin Octal	2/6

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100 Kc. R.C.A. Crystals £4

1000 Kc. Crystals, DC11 holder, with two pig-tail connect., 35/-
Marker and Commercial Crystals, price on request. Delivery seven days.

Following is a list of Crystal Frequencies available for immediate delivery. £2 each—

1500 Kc.	5300 Kc.	7020 Kc.	7110 Kc.	8042 Kc.
1900 Kc.	5335 Kc.	7021 Kc.	7120 Kc.	8155.714 Kc.
2081.2 Kc.	5360 Kc.	7024 Kc.	7121 Kc.	8161.538 Kc.
2103.1 Kc.	5456 Kc.	7025 Kc.	7125 Kc.	8171.25 Kc.
2125.5 Kc.	5530 Kc.	7032.6 Kc.	7126 Kc.	8176.923 Kc.
2208.1 Kc.	5700 Kc.	7035 Kc.	7130 Kc.	8182.5 Kc.
2218.7 Kc.	5815 Kc.	7042.65 Kc.	7134 Kc.	8183.5 Kc.
3025 Kc.	5892.5 Kc.	7047 Kc.	7135 Kc.	8188.889 Kc.
3062.5 Kc.	6100 Kc.	7050 Kc.	7150 Kc.	8317.2 Kc.
3086.5 Kc.	6350 Kc.	7052 Kc.	7156 Kc.	8320 Kc.
3382.5 Kc.	6375 Kc.	7053.5 Kc.	7163 Kc.	9060 Kc.
3500 Kc.	6450 Kc.	7064 Kc.	7174 Kc.	9125 Kc.
3511 Kc.	6666.7 Kc.	7068 Kc.	7175 Kc.	10 Mc.
3511.2 Kc.	7005 Kc.	7072 Kc.	7275 Kc.	10.511 Mc.
3516 Kc.	7010 Kc.	7073.5 Kc.	7810 Kc.	10.515 Mc.
3527 Kc.	7010.7 Kc.	7075 Kc.	8007.69 Kc.	10.524 Mc.
3540 Kc.	7011.5 Kc.	7077 Kc.	8008.5 Kc.	10.530 Mc.
3825 Kc.	7011.75 Kc.	7079 Kc.	8009 Kc.	10.5465 Mc.
4010 Kc.	7012 Kc.	7088 Kc.	8009.3 Kc.	10.556 Mc.
4070 Kc.	7013.7 Kc.	7100 Kc.	8010.5 Kc.	14.020 Mc.
5050 Kc.	7018 Kc.	7106.7 Kc.	8013 Kc.	14.322 Mc.

MORE BARGAINS ON INSIDE FRONT COVER!

Simulator Sets. Contains two meters 0-20v. and 0-5 Ma., 2 in. square type. Two VR65, one VR135 valves, one vernier dial. Genemotor 11-12v. input, output 480v. at 40 Ma. (conservative rating) and lots of resistors, condensers, etc. £5 each	
American Metering Kit containing one 0-10 Ma. and one 2 Ma. Meter, 2 inch round. Complete with cords and plugs, £2	
Inter-Com. Units, English. Contains two valves, transformers, P.M.G. key switch, resistors, etc. To clear	12/6 each
Shielded Cable with two 12-pin Plugs	7/6
Five-core Cable, not shielded	8d. yard
Co-ax Connectors, Ampenol type, male and female	7/6 pair
Co-ax Connectors, male/female, small Pi type, new, 2/6 pair	
Co-ax, indoor type, cotton covered	1/- yard
Co-ax Cable, any length, 50 ohms	1/9 yard

DX ACTIVITY BY VK3AHH†

PROPAGATION REPORT

3.5 Mc.: Only openings reported were to North America between 0700 and 1100.
 7 Mc.: Here conditions continued to be fairly reliable. For Central and South America, breakthroughs occurred between 0700 and 1100, and North America was well represented between 0500 and 1200. Europe was workable, over the long path, around 0500-0800, and, over the short path, around 1800-2200. Times for the Pacific Islands and the Far East were as usual.

14 Mc.: Here openings to North America were reported to peak around 0400-0800 and 1000-1400. Times for Europe were 0600-0900 (long path) and 1700-0000 (short path). Central and South America were workable between 0400 and 0800, while the band opened for Africa during the same period. Long-path conditions to Central and South America existed around 2200-0000.

21 Mc.: Conditions to North America were predominant, together with break-throughs from Central and South America 0500-0400. Africa was represented between 0500 and 0800. In addition, a European break-through occurred on 22/5/55. Long-path (1) conditions to North America (around 2200) and Europe have also been reported.

17/28 Mc.: More or less regular openings existed to North America 0000-0300.

NEWS AND NOTES

Lend a hand! Let's clean up 7 Mc.: DXers are officially requested to confirm the audibility of the following broadcast stations (from 3DU):

Kc.	Kc.
7000 BECC2 Taipei.	7030 Cairo Radio.
Taiwan.	7062 Radio Baghdad.
7005 Radio Valladolid.	7063 YUD All India.
Madrid.	Radio Delhi.
7010 Radio Pakistan.	7070 CRRR, Radio.
1100a.	Diwang, Angola.
7015 Bantok.	
7025 Radio Tahiti.	7079 Radio Enugu.
7030 Istanbul.	7092 Radio Baghdad.
7049 Lisbon.	7096 Radio Pakistan.

Please let us have your report including the time at which you heard any of the above stations!

Danny Weil is cruising around this planet with his yacht "Yasme" (call sign GMYT) and anticipates landing on and operating from CZ2, CZ3, VU5, CR10, VQ9, VQ7, Commoro Island, VR6, ZM7, Phoenix and Nauru. He expects to reach VK towards the end of 1955 (from 3CX, 3DU).

The American 7 Mc. Novice Band has been extended. Its new limits are 7200 and 7150 Kc. (from 3AXX).

FM7WQ is active on 14 Mc. phone and says he has no key! (from 4RW.)

Two ends of wire will do, OM!

KG1AA keeps Greenland on the air (14 Mc. c.w.) (from 4RW and Dave Jenkin).

XZ00M is on 14 Mc. c.w. and phone, daily 1230-1530, and on 7 Mc. on Sundays 0200-0600, 1100-1230 (from 3YS).

VR6AC was on 14140 Kc. during May (from 5WO).

QTHs OF INTEREST

KS4AW—J. Hancock, Swan Island, via Tampa, Florida, U.S.A.
 KG4AV—A. Bohne, Box 35, Navy 115, P.P.O., New York, N.Y.
 LU1ZT—A. Zetoli, Destacamento Naval, Bahia Luna, Islas Shetland del Sur, Antartica Argentina.
 MP14BN—Umm Said, QPC Ltd., Qatar, Persian Gulf.

ACTIVITIES

3.5 Mc.: Kel 3AP and 3AHH heard Ws.
 7 Mc.: Laurie 2AMB worked CO6AQ*, COT6P*, KL7BBV*, KL7BBY*, VE3FK*, VE7*, KZ5NM*, JACB*, G16TK* (0530) and heard KG1AA*, VJ2AF*, ZC2PD, FOM*, VP6GY, DL6UR. Neil SHG reports Ws* on phone. Noel

† Hans J. Albrecht, 10 Belgravia Ave., Box Hill North, E.12, Vic.
 * Call signs and prefixes worked.
 † — zero time—G.M.T.

KZ0 follows with KP6QA*, VY1AD*, HRLJZ*, HZ0*, VE5*, Eric BERS195 heard COT6P, KP4CC, KV4BK, VE3PK, VE3AAB, VY1AD. Jim Hunt heard the following on phone: HP2FL, DUTSV, ZM5M, JATST, JA1VT, JA1AGU. Dave Jenkin adds VE3PK.

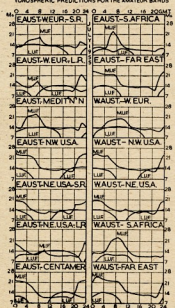
14 Mc.: G.W.—3AMR: HK0AL, YJ1DL, Jack J1A, 3M3A, F. CNER: NE0AE*, KL7AD, KL7USA*, FK3AJ*, XN0AE*, YU*, K8B, Kc 3KR: KAC3R*, YO3RP* and HK0AL. Bill 3TX: KL7A*, 3APF: ITI, Ced. 4Q: a series of JAs*, K8B, FK3AJ*, KL7AP*, Rob 4RW: XN0Y*, KZ5GH*, MP4B1*, OH*, YU*, TI2PZ*, VS8DB, K54AW*, HR1MC*, KCOJA*, PI2CE*, W7BRM*, KG4AB*, FAJBC*, KG1AA*, KL7PJ, VPEKL*, F7C8G*, ZD3A*, K4NTT*, 4X4DC*, DJ*, John SHI: F*, HB*, I*, YU*, Ray 3RK: K8B, FK3AJ*, KL7AP*, Rob 4RW: XN0Y*, HB*, KZ5IF*, SA1TZ*, SM*, G. BERS195: KJ6, KR6, LUSA, ZS2BC. Dave Jenkin: KJ6, KAKS, G. LUGM, FPAO, FK3AE, VERAU, KAKS, KG1AA, K8B, YU, HB, VK1EM (0720). EA1CP, KL7AV, VS1BJ, DL, SM, ON4, G, CTICE.

14 Mc. Phone—JA: KL7PJ*, KL7AZN*, KA3EB*, KR6AF*, Stan 3TE: CT1OR*, ZM6 AT*, VESG*, KL7PAL*, 4RW: V85CT*, K54 AW*, YN0YV, YN1A*, ZM6AT*, ZB1P*, YV5C*, KG4AB*, FM7WQ*, SHI: HK0AL, HB*, KQ9*, TITRAC*, ZS3JM*, AWO: CO2BL*, CT1PK*, VY5EU*, HRRH*, ZS5Z*, ZS9W, ZS1CG, ZS5D*, ZS6B*, ZS1JA*, F3AB* (1730). VS1GT*, DL*, G*, Jim Hunt: VS2DQ, VS1FO, VS1FS, VS1EW, VERAU, VS8BE, V86 CW, VS8CL, APZU, KR1USA, DJ1AS, DJ1AA, DUTSV, KG4AF, KG1AA, ZS6BV, ZS3CG, ZS6Q, HRRH, SA1TK, VY5AB, VY5AG, VY3EC, YV5BD, YV1CE, XE2N, XE2H, XE2OD, XE1KW, XE1RE, YS1MS, HCL1F, HCL1W, HC1CP, KZ5WS, T13LA, CM9AA, HK4AM, VPTNK, H8EG, CSAC, LC4DM, C3V, ODSAB, DL, V55CT, YU, SM, ON4, PAO, OZ, HB, IS1EHM, CT1OR, CT1PK, I, GCOFQ, OH, GMDIE, ODPRV, LASYE, GW3VF, 4X4DK, E2F, F, EACX, KAC3C, G.

21 Mc.: Fred 3ID worked W* and reports that 2AFE heard Ws and Europeans over the long path (1). Len SA1D mentions 4SYL, Max 4HD worked Ws*, YN1AA*, VP6FR*, HC1FS*, HC1ES*, TG9AZ*, 5WO follows with ZS5NM*, ZS6TE*, ZS6AC*, ZS6AND*, KAC3G*, Ws*, WOVVC, MM*. Jim Hunt heard CP5EK, T12IC, HP3FL, CO1AF, SV0WO, DJ1CZ, G3SHU, DL3RM, FR1ZA, ZDRD, VQ4AQ, ZELJK, ZS5HX, ZS5Z*, ZS6L*, ZF1FA, ZS6AND, VS8BE, VS8CL, VS8CZ, DUTSV, VS1PK, VS1BO, VS1FS, VS2DQ, VU2ET, 4SYL, 4H5B, KW6BS, KH3V, K4RUK, KH8AVH, KH8BC, KAZGS, JA1AG, KARAB,

PREDICTION CHART, JULY, 1955

IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS



JA3AB, JA1CR, VK9BS, W10SF/MM, W30ZA/MM, WH1KE/MM, K1KZX/MM, W4VWU/MM, W6WY/MM, W.

27/28 Mc.: Max 4HD presents an excellent list on his activities on this band for the month. He worked KJ1VA*, W0GAZ*, WETZU*, W6H*, W6LWZ*, W6UW*, W6VAD*, W5PIC*, W5JCW*, W5DSW*, W0AWI*, W6R3*, W3QMG*, KHQV*, W5YF*, W3CGG*, W7PJA*, W0PCK*, W6NAT*, W5H1U*, W6DKO*, W5VY*, W5BLU*, W5UDT*, W5NR*, KH6ALM*, KH6BKS*, W6ZOX*. Further, Austin 5WO worked W5DSW* and in addition, Fred 3ID and Angus 3Y reported that there were a number of good openings from ZL to W land. This is the best 10 dx report for years. Thank you and please keep up the good work!

Rare QSLs were received by 2AMB: for 7 Mc. contacts: DUWXX, IT1ZWS, GMBXC, CN1BJ, LUSYG, and for 14 Mc. contacts: LUBEN, ZS3PG, CT3AB, CN3AM, LUISE, 4RW: KS4AW, BERS195, F1RAP, HC3CP, KA0J, KG4AO, LUIA, LUTAB, ZS3IO.

Thanks to the Northern and Southern California DX Clubs and VKs 3ID, 2AFE, 2AMB, 3CX, 3DU, 3HG, 3IY, 3JA, 3KR, 3TE, 3TX, 3YS, 3ZC, 3APZ, 3ALD, 3AAX, 4CJ, 4HD, 4RW, 5HI, 5RK, 5WO, and s.w.l.a. BERS195, Jim Hunt and Dave Jenkin.

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 VICTORIA

6ZAK have returned from National Service. Lionel is re-building his modulator and Don busy shifting to his new QTH in Guildford. Len 6ZAT has been heard 4-6 in Fremantle by 6ZAA and another contact should be made here before long.

Jim 6RU and Dave 6WT made a re-appearance on the band and emit nice signals with their converted 1143s. They caused a minor "dogpile" of boys wanting new contacts! 6ZAA has built up a diode f.m. exciter and is busy on the discriminator as per 2ANF's articles in "A.R." Roger 6RK is re-building his f.m. and Len 6FM is trying a phase modulator. Warren 6WJ is prepared to grind anyone's crystal down. Warren shifted down from 144.48 to 144.19 Mc. My word this baby powder stuff must be dynamite! Don 6HK has double converted a Command rx for use in his proposed 2 mx mobile station.

Don 6HK and Wally 6ZAA had an interesting excursion to the Mornington trig point. Conditions were poor and the only two-way contact was with 6BO with signals 449 both ways. 6ZAS/P was the only other station heard. Afterwards a large piece of ironstone was found attached to the permag speaker so perhaps this, plus the antenna being surrounded by trees were responsible for the poor signals. However, it was a most informative trip and showed that even 80 mx is not reliable 100 per cent, as signals on that band were little better than on 2 mx.

288 Mc.: 6ZAV and 6BO have been carrying on their tests. Frank 6CC was heard by Don 6ZAV over a distance of eight miles. The contact was multiband 144, 288 and 3.9 Mc. You'll have to build a 2 mx converter Frank! Stan 6ZAS is wiring up his mod. osc. and should be on the band very soon. Murray 6ZAM and Wally 6ZAA had a crossband QSO from Kalamunda with Rollo 6BO. Wally's new xtal converter, 6J6 mixer, was used and also a modified AR201. Tests from Bassendean to Fremantle over a difficult 15-mile path were unsuccessful. Looks like an r.f. stage is needed! Wally 6ZAV is trying out a double mixer in an ASD4 rx. Injecting 136 Mc. into both mixers. Tuning from 136 to 140 Mc. he covers the eight megacycles of the 288 Mc. band and the lower frequency oscillator is more stable! Should work very well. Don, Cecil 6ZAZ is talking about putting on a pair of 7193s.

676 Mc. and Above: Jim! at the moment. How about it boys?—6HK.

S.W.L. SECTION*

S.W.L.'s. TO BE ISSUED WITH OFFICIAL CALL SIGNS

From the 1st June, 1955, Associate members of the Victorian Division W.I.A. and members of the S.W.L. Group will be issued with official L numbers. This means that s.w.l.'s can have printed on their cards and report forms official station numbers.

If you are a member of the Victorian Division and wish to obtain an official s.w.l. L number, write to the Secretary, W.I.A. Victorian Division, 191 Queen Street, Melbourne.

Official report forms may be obtained from the above address at a cost of 2/6 per 50 sheets.

S.W.L. CONTEST

Well last month saw the end of the first official S.W.L. Contest and by the time this issue goes to press, the judges will be examining all entrants' cards.

Results will be published in next month's "Amateur Radio," and broadcast through 3WI on 7146 Kc. and 3373 Kc. at 1130 hours E.S.T. on Sunday, 31st July, 1955. So chaps, do not forget, have those receivers tuned to those frequencies on that morning. Winners will be notified by mail.

VICTORIAN S.W.L. GROUP

This Group met in the Club Rooms, 191 Queen Street, on Tuesday, 31st May, at 2015 hours. We had a large number present and had a very good rag-chew on coming attractions of the year. Meeting closed at 2230 hours E.S.T.

SOUTH AUSTRALIAN S.W.L. GROUP

At the time of writing, no notes had been received from this Group for the month of May. I was informed that VK3 Jim Paris was visiting VK3 early in June and then going on to VK2. Jim is on holidays, so good luck Jim and have a good time.

* Compiled by John Wilson, 37 Rayment Street, Alphington, Vic.

S.W.L. HINTS AND KINKS

To keep this column going, we wish to hear from any s.w.l. who has any ideas to exchange in this column. Just send all ideas to "Hints and Kinks S.W.L. Section," 37 Rayment Street, Alphington, N.20, Vic.

AROUND THE BANDS

Over the past month the bands have been very active, both week-ends and evenings. 20 mx has proved very crowded with both Europeans and Ws, while 40 mx during evenings up to 1700-200 has shown W0-9 at S-F signals.

Those heard have been—14 Mc.: From Michael Ide: 3FO, 3YS, 3EN, 3BH, 3BQ, 3RK, 3ZAM, 3ZAY, 3ZAA. He has received QSLs from 3FO, 3BH, 3YS, 3ZAY, and 3ZAM.

21 Mc.: From Rod Rod Balfour of VK1-ZLEK and W0R0K at S-S+ plus VK3 and VK4 and weak Ws.

14 Mc.: Michael Ide—CO1, CO2, CM9 CT1, DL2, DL4, DUE, HP3, FAS, 11Z, JA6, KAO, 2, 3, 7, K1B, KGA, KQ6, K3E, K54, KL7, K1B, KW6, KX6, TG9, T12, VE3, VET, ET2, VR2, 3, YV1, YV5, XEL, XE2, ZME, VK9, V81, V86, 4X4, CT2, JAI, YX1 and all W call signs. From Albert Angus—K2, 3, 4, 5, 6, ZL1CA, CO2BC.

Gordon Hepburn, of VK2, heard 158 stations on 20 mx during the last month. Receiver is a Kresler d.w. table model on inside antenna. Good work, Gordon, and from my location—W1-0, KA, KG, KL7, 4X4, 457, HP3, KGA, ZLI-3, 7 Mc.: My location—VK2-6, W0-9.

Thanks to Michael Ide, Gordon Hepburn, Rod Balfour, and Albert Angus for your reports.

Broadcast Band DX: Heard on approx. 1430 Kc. Station KHON (or M) at S3, R2. This station was heard at 0200 E.S.T. and should be a good one during the Winter months. They put on a news service at 0200 till 0205, then hit tunes until 0230 E.S.T.

Also on 930 Kc. Voice of America in the Philippines at 59 signal. Real arm-chair copy.

Broadcast Short Wave: AFPS on 31 mx band S9 signal with baseball round-ups at 2100 E.S.T. Radio Australia at 0000 E.S.T. to Asia on Saturday on 40 mx band, excellent signal. Canoe to Eastern Australia daily on CKLO 8.63 Mc. (31.15 mx) and CKUA 5.97 Mc. (50.25 mx) at S7-9 signal. Listeners' Corner is heard on the Saturday transmission. Air times 1945-1915 E.S.T. daily.

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FEDERAL

THE QUEEN HONOURS AMATEUR

A Birthday Honour has been conferred by Her Majesty the Queen on a well known member of the Wireless Institute. The popular President of VK2, Mr. Jim Corbin, VK2YC, has received the M.B.E. Award in recognition of his outstanding assistance in Amateur Radio, particularly in the recent New South Wales floods.

Members throughout Australia will join with Federal Executive in offering congratulations. Well done! Jim, and thanks for your fine work. The honour reflects credit on the Institute.

TELEVISION

Of all the particular aspects of the Television set-up in Australia, probably that of most interest to Amateurs is the matter of frequency channels. These are:—

49 — 56 Mc.	174 — 181 Mc.
63 — 70 Mc.	181 — 188 Mc.
85 — 92 Mc.	188 — 195 Mc.
132 — 139 Mc.	195 — 202 Mc.
139 — 146 Mc.	209 — 216 Mc.

It will be noted that the 49-56 Mc. band results from the change of the Amateur 50-54 Mc. band being changed to 56-60 Mc. This change will take place in 1956. The 139-146 Mc. band involves the change of the 144-148 Mc. band to 146-150 Mc. This change, however, is not proposed until 1963.

Amateurs who were on the air pre-war will remember that 56-60 Mc. was one of the authorised bands and was the centre of much experiment before 1939.

A SILVER ANNIVERSARY

An interesting Silver Anniversary which took place last May was that of "The Calendar," the official news sheet of the I.A.R.U. (International Amateur Radio Union).

The first Calendar was dated May, 1929, and it has been published regularly, except for war years, ever since in June and December. The Calendar was established by the Constitution of 1929, which changed the I.A.R.U. from a

mixture of individual members, national sections, and member-societies to its present form, and its first act was to proclaim the adoption of the then new constitution. Present members on the roster at that time included A.R.R.L., A.R.L., Canadian Section A.R.R.L., R.S.G.B., R.E.F., S.A.R.L. and W.I.A.

FED. CONTEST COMMITTEE

On another page of this issue will be found the complete rules for the 1955 Remembrance Day Contest. These rules are substantially the same as for the 1954 Contest, except that the operating procedure of what we have termed "substitute operators" has been clarified and incorporated in the body of the rules.

Members will remember that last year the Committee was asked at short notice to clarify rule 5 (which, incidentally, has been in the rules for some years) and their interpretation which was acceptable to W.I.A. members last year and also the Radio Branch of the P.M.G. Department has now been embodied as a sub-division of rule 5.

Your Committee is disappointed they have been obliged to publish the same rules as last year, because it was hoped some formula could be devised to ensure an equitable distribution of points which would fairly reflect the Divisional effort of both large and small States alike. This has not been due to lack of effort on the part of your Committee and others concerned in the popularity of this Contest.

Most comprehensive proposals were made by your Committee, Major Mitchell, of Federal Executive, and Bill Falconer, our Actuary. The Committee also received most constructive suggestions from the VK7 Division.

It appears, however, that no two States could agree on any formula proposed by the various members concerned and as a result, the rules must remain the same, at least for this year.

The Committee wishes you all the best of luck in the Contest. We would like to see as many participants as possible enter the Contest this year in the interest of their Division

to whom they owe their support. May the best Division win.

The Committee proposes to publish in the form of an article in the August issue of this magazine some suggestions on operating procedure, together with some "Do's and Don'ts" which will assist the Committee in checking logs. Please do your best to follow these suggestions because we can assure you they will help the checking Committee very much, especially at 0100 in the morning during peak periods when their grid drive is very low! — . . . —

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

A QSO with YJ1DL brought to light some interesting information on affairs in general in the New Hebrides. He reveals that prior to taking up duty there he was ZC3AB on Christmas Island for some time. Prior to returning to YJ he had a spell in VK4 but decided he liked the islands better. Informed me that an old time friend in Frank Harvey, YH1RV, had passed away about two years back. Frank, who was at Epi, Bonkivia, would be well known to the real old timers. YJ1DL states that there are some French Amateurs there although FUSAC is presently on furlough in France. They seldom work non French-speaking Amateurs owing to their knowledge of English being very limited. YJ1DL was currently using 220 watts, but his normal input is 50 watts. The higher power is too costly owing to the power charges being two shillings per kw. hour. Says life will be a little dull from June onwards as the plane service is then due to cease. He is still a financial member of the N.S.W. Division and states that sometimes he receives "Amateur Radio."

Jim Pershouse, VS2DQ, of Baling Estate, Kuala Ketil, Kedah, Malaysia, again puts pen to paper to say he will be going on leave to England in July next and returning to Malaya in 1956. He is disappointed at the tardy response to QSLs which has him held up on DX C.C., B.E.R.T.A. and W.A.P. As QSL Manager for the M.A.R.T.A. he states that for many months

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SPECIFICATION

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Output level —65 db ref. 1 volt/dyne/cm².
Frequency response—substantially flat from 30 c.p.s. to 10,000 c.p.s.
Directivity—non-directional.
Size—2½" spherical diameter.
Connector—Standard international 3-pin.

MIC 16



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SPECIFICATION

Output level: —55 db ref. 1 volt/dyne/cm².
Cable—approx. 4 ft. of co-axial supplied.
Weight—6 ozs. unpacked, 7 ozs. packed.
Dimensions—microphone only 2½" x 2½" x ¾"

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This omni-directional Microphone is robust in construction, with a pleasing appearance. Vibration, shock or low frequency wind noise will not affect the performance. The low frequency cut-off is dependent on the load resistance. The cut-off is given by the quotation, $F = 80 \div R$, where F = c.p.s., R = megohms. An adaptor (floor mounting) is available at low extra cost.

SPECIFICATION

Output level = —50 db ref. 1 volt/dyne/cm².
Output impedance—equivalent to approximately 0.002 uF. (0.8 megohm at 100 cycles).
Frequency response—substantially flat from 40 to 6000 c.p.s.

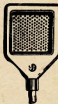
Recommended load resistance—not less than 1 megohm, dependent on low frequency response.

MIC 22



LAPEL MICROPHONE

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Designed to give freedom of movement, this Microphone is small and non-directional. Housed in a soft moulded rubber case, which gives protection against shock, it is provided with a pin at the rear of the case for pinning to the lapel.

SPECIFICATION

Output level—approx. —55 db ref. 1 volt/dyne/cm².
Recommended load resistance—5 megohms.
Frequency response—level throughout the whole of the audible spectrum.
Capacity—0.0015 uF. at 1000 c.p.s.
Impedance—100,000 ohms at 1000 c.p.s.
Cord—6 ft. shielded cable.
Size—1.9/16" wide x 2½" long x ¾" thick.

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Page 21

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See "Radio and Hobbies" of Feb-
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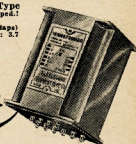
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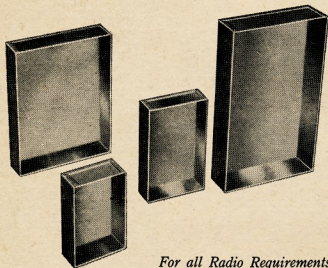
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at the nick of time along comes a letter from one of the other of the country areas which saves the day. It is from this month. I have news of the Port Lincoln area, an area incidentally that has been silent for some time in these notes. The correspondent writes that he tells me that the area was honored recently by a visit from the worthy Vice-President, John SKX, who was on a working visit, but very busy and unfortunately could not be shown the sights. However, John was very welcome and it is hoped that on his next visit he will be able to make a more complete tour. I have heard up on the highly reputed DX conditions that are said to abound in large chunks.

Another welcome visitor was Clem SGL, who did much more machinery work than I have seen quite a lot of the 50 cycles. He visited the local 50 cycle hatchery and under the guidance of Wally SDF was very impressed with what he saw.

The atmosphere is at long last being bomarded with signals from the antenna of Pat DLT on 20 MHz, although as yet there have been no reports as to the signals arriving at any place. His wooden tower is not up in the air yet, but from all reports it is to be just.

Jack SVJ always seems to be busy these days fixing up other people's sets and therefore has had no time to chase the spiders out of his set. He has been working on a set for some time or other and then look out spiders, here he comes. Wally SDF was having an enjoyable conversation with him recently, but he was not when strange noises and odd smells indicated that the contact was finished ahead of schedule, due to the power transformer making the unwelcome noise. Repetition is being the order of the day he decided that it would be a good time to re-build the buffer and final stages of the set or to get it fixed. He is looking to the full delving into the inside to see just what makes it tick. Many thanks for the news Wally, always remember that no news is bad news.

To Charlie 50N goes our deepest sympathy in the loss of his wife this month. It is extremely difficult to put in just a few words, but in moments like this and that I can only say that time is a great healer and our thoughts are with him in his sadness.

Incidentally, my notes I said that Alan SVO was well on the way to good health again, but the latest news tells that he has had a relapse and is being kept in the hospital longer than was at first thought. Sorry to hear it OM, but keep the chin up, and here's hoping that you will soon be on the jolly old feet of good health again. I have heard of a bonny bouncing boy this month, and seems to have come through the ordeal quite OK. We missed him through the last three or four days successfully although he was anxious time over the last 24 hours. We are happy to advise that we have never lost a father, but I must congratulate you, the prospective Amateur in the family, do you feel hysterical with joy?

SOUTH EAST AREAS

The meeting night of the S.E. gang for May was held to a representative gathering who thoroughly enjoyed the entertaining evening. Erg SKU, who had just returned from holidays in VK3, provided the main entertainment for the night by projecting some excellent color photos of his tour of the local area. Ballarat, Bendigo, Geelong, Warrnambool, and several other places which he had visited. The gang also had the pleasure of the photos taken of the boys and the R.D. Trust and many and varied were the remarks passed as to the photogenic possibilities of those in the party. Erg SKU was the first to speak, and the night and everybody present voted it one of the best gatherings to date.

Erg I had a very little activity on the air to report for this month as he has been away on annual vacation, but with the arrival of the cold weather, no doubt he will be heard more frequently. John SGL has been very busy, but has been keeping steady on 20 MHz, but has not been heard on any of the other bands. 10 MHz showing any signs yet OM. Claude SGB has been busy on 20 MHz, but has not been heard getting out extra well. He could not attend this month's meeting because he was rejoining in and out of the country. To form he has been accumulating quite a pile of DX equipment. Oh to have so much filthy lucre!

Col SGB has also been active on 2 and 40 MHz, but has not been heard. Leo SZAG has completed his new beam, but is having a little trouble getting it skywards. The trouble is that the birds in the vicinity are picking up the beam and are keeping putting the elements out of alignment. Perhaps Jim SKJ will lend you one of his many umbrellas and then you can work at the

base of the beam without any qualms! Bram SZAB is among the missing for this month, but if any of you can believe any of the news. Judging by the VK3 v.h.f. notes in the magazine he should be more than satisfied.

Stuart SMS has had a quiet month, as far as the DX or country work is concerned. He has been working on the construction of a 2 m x 12 controlled converter, and hopes to have a 5/5 ratio in one or two months. He has been listening although finding a little time for activity on 20, 40 and 80 mhz. Not too much success to any new countries, only two this month, but he has one fine color film and is waiting to take a photo of me in color. He said that he will be able to do this when he gets his new cine-camera. He tells me that this is the only way he could fit me in the newfinder. Could he be kidding me? Les SAX, of Gawler, now has a brand new set-up with a 614 in the front end and a 2 m x 12 controlled converter. He is still changing his antennae around, but is still not satisfied, either the feeder does not work or the antenna does not radiate. If I may use the words of a cleverer man than I am, if you use a put a feeder on the junior op, it does not necessarily mean that he will eat it!"

I received a post card today from Brisbane showing a decidedly red nosed character holding a glass in his hand. The card is of a man with an amber colored wig and looking at the camera on his face and the colour of his nose, he is no stranger to the said liquid. The words on the back of the card tell me that the SXX cannot hear my 80 mhz signals in Brisbane, and with a look on my face as would be worn by the one that is filled with the canary, I reply that he could not hear my signals are deluding him alone in Brisbane. Ho hum! Have a good time Arch!

Speaking of VK4, Associate members' representative on the VK5 Council, Jim Paris, is spending a couple of months in that fair State. He recently displayed his grocery business in a northern suburb for several millions and is determined to relax in luxury for some time to come. If any of you VK4 chaps should see him, please send him my regards. He is lazily strolling down a main street in VK4, watch to see if he opens his wallet. If a couple of moths fly up, that's Jim!

WOOMERA RADIO CLUB

Ray SFF is given pride of place in the news from the Woomera area. He has been a father for the third time, to wit, a daughter. Unfortunately he has been on the sick list himself, but from all reports Ray is doing well and is on the road to good health. Once again I must repeat that we have never lost a father in VK3; mind you, we have gone close, but we fathers are made of stern stuff, a fact that sometimes seems to be overlooked by the XYLS. The two aspiring candidates for the A.O.C.P. from the club appear to be very promising. Running and running, and running. Keith and Bernie should know just how the results have gone. Best of luck fellows, and don't worry if you don't get out, you, many a better man than you has sat more than once. I began to lose heart after the fifteenth mile! Sydney, who is starting back in the light slightly, is doing real well. He is going to have an examination will test his skill. Keep it up OM.

Ron SFF recently took his rig to the clubroom and put it on the air. It is a 2 m x 12 controlled converter, 2 m x 12 controlled converter, and an end fed vertical, makes it even harder to get inside the shack these days. Ron makes some DX contacts, but he is not to treat such nasturtians with suitable ignore.

TASMANIA

The field day held at Richmond on 15th May was a big success. Despite very gusty winds and threatening clouds, the response to TMB for choosing such a good picnic spot, and also for the trouble he went to in placing marker flags around the site, was very good.

The 80 and 2 m x 12 tx's were concealed in a hole dug under trees and scrub on the river bank, by E. Rumour has it that Len plans using a bulldozer to get the site. I don't forget to take a spade along. First home was TBJ, closely followed by TOM, TLJ and then Brian. The trophy of course is now in the custody of TFM, who hopes to use it as a cavity resonator until such time as he has to hand it over.

An expert throw by Mrs. TLJ placed her first in a "throwing the rolling-pin" contest. Could it be that you are an artful dodger, Lon?

A blind-fold test was given by TMB, a bit of amusement for the onlookers, and TFM turned the tables by registering shortest time, whilst Rolly Shortridge, of the training ground, was walking into the river after the elusive signal. Len's (7LE) time was considerably extended by the fact that the tx never seemed to be at the right place at the right time. The amount of malicious enjoyment was had by pushing the car (with the tx in it) around the field, and the car was not to be seen at the show. Len, don't leave the car unlocked next time. On second thoughts though, if it's to be a bulldozer, that will slow them down quite a bit.

The general meeting for June was held at the usual spot with about 21 present, and presided over by TMB. The guest given by David Johns, was entitled "Wild Life in Macquarie Island," and it proved most interesting indeed. David used coloured slides to illustrate various points in his lecture to a most appreciative audience. That reminds me, congrats, are due to David on passing the A.O.C.P. and we hope to hear more from him in the future.

Suggestions from TFM and TLJ regarding a mobile hunt and a field night were held over pending better weather.

TJB, Richard, has secured two new antennae poles and is also becoming interested in 2 m. Go to it, Harry. I can recommend the 2 m antenna being quite free of the QRM and troubles experienced on 40 mhz. Very frequently quite free of everything else too, but we can hardly blame the band for that. Barney Watson has been working on a 2 m x 12 controlled converter, 144 Mc., and has the job well under way. You will have to bring more pressure to bear on Tom, as he has been working on a 2 m x 12 controlled converter, 144 Mc., and has the job well under way. You will have to bring more pressure to bear on Tom, as he has been working on a 2 m x 12 controlled converter, 144 Mc., and has the job well under way.

Lon TLJ is spending some time exploring the transistor field, and I understand he has a transistor tx working on 2 m. I think the lecture committee will be looking in your direction soon, Lon. After his recent speech, I think Athol TAJ is now up and about again, and adding to the number of 10 to the ether. Doug TAB has certainly lost no time in settling down to business and now has a beam up and working on 20 mhz. Smart work, Doug.

The old grape vine brought to light some interesting news of TMB's activities. Apparently Dave, having received a letter from the enclosure, finds now that the lounge room is fit more closely than calculated—or vice-versa. Anyway the letter was a pleasant and helpful suggestion (gellignite barred) would probably be appreciated. Certainly is a "rum" turn of events.

Tom TAL, having moved to a new QTH, was dismayed in a radio sense, of course! to find TDW building nearby. Best you sell a T2FD Doug Tom, and then you can be sure to get together you can absorb each other's energy in the terminating resistors. Associate Sandy Powell (I speed to you) has succumbed to the audio bug, and is sinking quite a bit of his "hard-earned" into a wide-band tuner and all the trimmings. After a few teething troubles, he has been able to get the tuner to work, and he has to switch it off, because it makes him feel he is back at work.

NORTHERN ZONE

Congratulations have been pouring into the TRB donations on the arrival of the long-awaited son of the TRB, a 2 m x 12 controlled converter, a mobile 2 m x 12 tx is well under way. Whilst new 40-20-15-10-5 mhz 100w. tx has been operating very successfully on a dummy load. With this and the new 2 m x 12 controlled converter, Gordon will be a force to be reckoned with in the R.D. Contest. If one is to believe all one hears, the veteran transistorist, in putting the exploits of Marco Polo. TLX is settling in well in the new job.

TLZ, TBM and TSQ have been busy with v.h.f. gear. TBM has been busy with the A.O.C.P. gear ranks at present for golf. Local v.h.f. men are very happy with the bi-weekly weather and the stable atmosphere at 12.25. It is quite a lot re temperature, inversion, etc. given. As your truly, TXW (deputising for TCA) is leaving Tasmania to take up an appointment in the "Shangri-la" of the TRB here's a suggestion. For the next annual meeting how about making a real outcrop of it by all the TRB men and women, and making all accommodation facilities are available—TXW.

NORTH WESTERN ZONE

News from the central highlands indicates that the Amateurs in that locality are very enthusiastic about v.h.f. and have gone to a great deal of trouble in order to get signals in and out of their mountainous areas. They have been constructed and mounted with vertical polarisation on Mt. King William and Mt. Olym-

pus and horizontally polarised on Brady's Look-out, which are all over 4,000 ft. in height. These serials are beamed towards Wacongeston and are heard here and there from them are requested to contact 7WN or Mr. Bill Ion, of Bronte Park. It is expected that the installation of a parasitic array on Frimley Hill, Cap and Mt. Dromedary will be carried out later on.

The last general meeting of the zone was a combined meeting held at the home of P. where a very good attendance welcomed two new Associates to the zone. At the meeting it was decided to concentrate work on 2 mX gear, for the summer of 1956, with the zone closed with a few words in honour of the late Murray Richardson, TMR, and then adjourned to light refreshments and a presentation of speaker columns which proved extremely satisfactory.

A visit from 7AL the other day disclosed of some adventures in holiday lands in VKA and now he appears almost broke with only a few pieces of junk to show for his gadding about. Good luck to you, Ken; wish it had been me.

PAPUA—NEW GUINEA

News from VK9 this month is somewhat restricted, due no doubt to the fact that the boys have been QRL or just plain forgetful. The usual spots of work with VK9 are likely provide an incentive to others to try their luck, was the fact that Frank 8FN, with nothing better to do, decided to try his luck on 3.3. He, hopefully called, CQ. Imagine his surprise when a G station answered his call. To prove it wasn't a fluke, Frank decided to try and make this one another all quick, but by a PAO. Not satisfied with that, and chasing

his luck, Frank then worked a couple of W stations. Won't be long now, that one will find VK9 dotted throughout the 3.5 Mc. and during the long winter evenings in the Southern Hemisphere. Most likely see you there Frank one evening soon.

The VK9 gang are arranging a Convention, to be held, we believe, in Lae. Appears that some VK4s have expressed their desire to visit us while on their way to Lae. We have been finalised. Perhaps, too, that some of the other stations may be interested. You can be sure that the conviviality and hospitality will be second to none as we do know how to do these things. Lots of arrangements to be made, organising to be done, but details will be made available to all those who may be interested as soon as possible.

This year the VK9 gang intend to field a full team in the R.D. Contest. Details are top secret of course. More than my life is worth to divulge them. I can say this though, "All the participating stations intend to work the clock around." Looks like coffee will play a big part in keeping the gang on their toes, or should we say, glued to their chairs. Just watch our smoke! An alarming thought just occurred to yours truly. Suppose the h.f. association turned up. I can see it. An association of ideas no doubt, but what a horrible thought.

9CS has been visiting the Highlands. Heard recently from 9RC in Wau. Hope you can make it some time soon from the States. Can Regulars on the Sunday net: 9FN, 9RC, 9RM, 9DT, 8AU, 9EB, 9QC, 9GV, 9WF, and 9BW. Would be glad to hear of you, too, in the Sunday morning net on 7080 Kc. at 1000 hours. 9GS using a cubicle quack on 15 mX and getting some good reports. Bob also has a 3 el. beam almost completed. Can't say it's impressive, too. Ron 9RG due to go on leave

Tom Mulder would go up in the estimation of Hams if he would be a bit rougher on his letter and apologise to the Limited Class Licensees.

—GORDON WEYNTON, VK3XU.

Editor "A.R." Dear Sir,

Being a Limited Licensee, I would like to make a reply to Mr. Mulder's letter in June "A.R."

His main point is the assertion that Limited Licensees are not interested in the h.f. bands. I don't know what the position in the other States is, but here in VK4, the Z boys I've worked, as well as myself, are still interested in 40 and 20 etc., and a number of them are working hard for the day when they may transmit on these bands. Working overseas countries is a story, but for the h.f. bands, has a fascination all its own and most Amateurs get the DX bug at some stage of the game. Surely L.L.s are no exception.

I, and I think many of the other L.L.s, regard the Limited ticket as a means to an end. Lack of time or some other reason prohibits some keen Associates from passing the theory. They pass the theory and regs. OK (they are probably radio technicians) and so they take out a Limited. Then they may sit at home, or at their leisure, and chat about the theory or regs. exams. Before, the morse had to be passed within a year of passing the theory and regs and if the unfortunate student had to start all over again. This point, I think, does away with the possibility of having a Divisor or a C.O.P., or a F.E., composed of L.L.s, and the L.L.s, in time, of the present L.A.O.C.P. holders will be given the present L.A.O.C.P. holders will give their A.O.C.P. and if they don't, and if as Mr. Mulder thinks, no full licensees (or a few, and how) are taken out, then ultimately there won't be anyone to use the lower frequencies and so the h.f. bands wouldn't matter anymore.

I think a better way of looking at the matter is to regard the L.A.O.C.P. as an extra rung in the ladder leading to full Amateur status. People who are fed up with the L.L. ticket don't regard myself as a full Amateur and I will not do so until I pass the morse test and take out a full license. The L.L. ticket is a dead end. New blood is coming into the Institute in the person of Z call holders and, of course, this is all to the good. By admitting a L.L. to full membership, the Institute is giving the W.I.A. is much increased. If a L.L. could only join as an Associate (i.e. non-transmitting member), then I for one would not be satisfied. The only alternative, as far as I can see, is to create a 3rd grade of membership, but this leads to administrative difficulties and can cause a type of "class division" in the Institute.

The Institute, in my opinion, has done the right thing in making L.L.s full members—it is a privilege and a badge of honor. I don't say that I am a full member of the W.I.A.

—DAVID RANKIN, VK3ZQA.

soon and expects to bring back a brand new rig with him from Australia. Bill SWP still thumping out a signal with his 4 watts and getting in amongst the W stations. 9BW still in the process of building new rig, but managing to get on the air with the help of John 9BCB being QRL with official business lately and unable to devote much time to Amateur Radio.

All for this month gang, but please drop me a line every now and then so that we will be able to make something out of this column.

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The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

ANSWERS TO VK6MK

Editor "A.R." Dear Sir,

With reference to Tom Mulder's (VK6MK) letter in the June issue, may I use your valuable space to reply?

Mr. Mulder transgresses four of the six clauses in the time-worn Amateurs' Code of Ethics—a code which we Amateurs have always measured since the earliest days of Ham Radio.

Number 3 clause reads: "The Amateur is Loyal." I desire to point out that the Uniform Constitution adopted by all States of the I.R.U. does not discriminate against Limited Class Licensees. The fact that the VK6 Constitution presently discriminates is an act of disloyalty to the Institute as a whole. This is a continuing disloyalty until the VK6 Constitution is amended in line with the Uniform Constitution now proposed.

Number 3 clause reads: "The Amateur is Progressive." A change in time (we are now in 1955) requires a change in outlook. Limited Class Licensees are the Hams of today. Mr. Mulder wants to discriminate against them because they can't read Morse and can't operate on the lower frequency bands. Such an attitude is obviously unprogressive and should be scrapped.

Number 4 clause reads: "The Amateur is Friendly." I condemn Mr. Mulder's attitude as unfriendly and the present Constitution of the VK6 Division, barring Limited Class Licensees from full membership, as unfriendly, provocative and likely to cause unrest and schism within the Institute.

Number 5 clause reads: "The Amateur is Balanced." Mr. Mulder is biased against the Limited Class Licensee. The attitude is unbalanced and is unbefitting of a Ham and a gentleman.

I see nothing frightening in the prospect of Limited Class Licensees taking office in the Institute. In fact I can see nothing but good in the suggestion that they should do so. Why it can be imagined that Limited Class Licensees are not to be trusted in office because they are not to be trusted on the air is a very curious query. Bands, is completely beyond me. Such licensees are just as much Hams as those on the lower frequency bands and distinguished against them is unjust and unwarranted in the extreme.

If friend Mr. Mulder had sat down and thought about the subject a little more, he would have written in the vein that was published in June.

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